SEQUENCE LISTING

<110> Hsueh, Aaron J. W.
Hsu, Sheau Yu
Liang, Shan-Guang
Van Der Spek, Petrus Johannes

<120> Novel Mammalian G-Protein Coupled
Receptors Having Extracellular Leucine Rich Repeat Regions

<130> STAN-084

<140> 09/647,067
<141> 2000-09-25

<150> PCT/US99/06573
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Pro Thr Leu Gln Ala Leu Thr Leu Ala Leu Asn Asn Ile Ser Ser Ile
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Ser His Leu Gln Gly Asn Leu Thr Val Cys Asp Cys Cys Glu Ser Phe
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Cys Pro Val Leu Thr Ala Ala Ser Cys Gln Arg Pro Glu Ala Tyr Trp
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Asp Ser Phe Val Ser Asp Ser Ser Asp Gln Val Gln Ala Cys Gly Arg
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Gly Asn Pro Ser Leu Ile Thr Ile His Phe Tyr Asp Asn Pro Ile Gln
65                  70                  75                  80
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Phe Ser His Gly Gly Gly Gln Asp Val Lys Cys Ser Leu Gly Tyr Phe
            20                  25                  30
Pro Cys Gly Asn Ile Thr Lys Cys Leu Pro Gln Leu Leu His Cys Asn
        35                  40                  45
Gly Val Asp Asp Cys Gly Asn Gln Ala Asp Glu Asp Asn Cys Gly Asp
    50                  55                  60
Asn Asn Gly Trp Ser Met Gln Phe Asp Lys Tyr Phe Ala Ser Tyr Tyr
65                  70                  75                  80
Lys Met Thr Ser Gln Tyr Pro Phe Glu Ala Glu Thr Pro Glu Cys Leu
                85                  90                  95
Val Gly Ser Val Pro Val Gln Cys Leu Cys Gln Gly Leu Glu Leu Asp
            100                 105                 110
Cys Asp Glu Thr Asn Leu Arg Ala Val Pro Ser Val Ser Ser Asn Val
        115                 120                 125
Thr Ala Met Ser Leu Gln Trp Asn Leu Ile Arg Lys Leu Pro Pro Asp
    130                 135                 140
Cys Phe Lys Asn Tyr His Asp Leu Gln Lys Leu Tyr Leu Gln Asn Asn
145                 150                 155                 160
Lys Ile Thr Ser Ile Ser Ile Tyr Ala Phe Arg Gly Leu Asn Ser Leu
                165                 170                 175
Thr Lys Leu Tyr Leu Ser His Asn Arg Ile Thr Phe Leu Lys Pro Gly
            180                 185                 190
Val Phe Glu Asp Leu His Arg Leu Glu Trp Leu Ile Ile Glu Asp Asn
        195                 200                 205
His Leu Ser Arg Ile Ser Pro Pro Thr Phe Tyr Gly Leu Asn Ser Leu
    210                 215                 220
Ile Leu Leu Val Leu Met Asn Asn Val Leu Thr Arg Leu Pro Asp Lys
225                 230                 235                 240
Pro Leu Cys Gln His Met Pro Arg Leu His Trp Leu Asp Leu Glu Gly
                245                 250                 255
Asn His Ile His Asn Leu Arg Asn Leu Thr Phe Ile Ser Cys Ser Asn
            260                 265                 270
Leu Thr Val Leu Val Met Arg Lys Asn Lys Ile Asn His Leu Asn Glu
        275                 280                 285
Asn Thr Phe Ala Pro Leu Gln Lys Leu Asp Glu Leu Asp Leu Gly Ser
    290                 295                 300
Asn Lys Ile Glu Asn Leu Pro Pro Leu Ile Phe Lys Asp Leu Lys Glu
305                 310                 315                 320
Leu Ser Gln Leu Asn Leu Ser Tyr Asn Pro Ile Gln Lys Ile Gln Ala
                325                 330                 335
Asn Gln Phe Asp Tyr Leu Val Lys Leu Lys Ser Leu Ser Leu Glu Gly
            340                 345                 350
Ile Glu Ile Ser Asn Ile Gln Gln Arg Met Phe Arg Pro Leu Met Asn
        355                 360                 365
Leu Ser His Ile Tyr Phe Lys Lys Phe Gln Tyr Cys Gly Tyr Ala Pro
    370                 375                 380
His Val Arg Ser Cys Lys Pro Asn Thr Asp Gly Ile Ser Ser Leu Glu
385                 390                 395                 400
Asn Leu Leu Ala Ser Ile Ile Gln Arg Val Phe Val Trp Val Val Ser
                405                 410                 415
```

Q8

```
Ala Val Thr Cys Phe Gly Asn Ile Phe Val Ile Cys Met Arg Pro Tyr
            420                 425                 430
Ile Arg Ser Glu Asn Lys Leu Tyr Ala Met Ser Ile Ile Ser Leu Cys
        435                 440                 445
Cys Ala Asp Cys Leu Met Gly Ile Tyr Leu Phe Val Ile Gly Gly Phe
    450                 455                 460
Asp Leu Lys Phe Arg Gly Glu Tyr Asn Lys His Ala Gln Leu Trp Met
465                 470                 475                 480
Glu Ser Thr His Cys Gln Leu Val Gly Ser Leu Ala Ile Leu Ser Thr
                485                 490                 495
Glu Val Ser Val Leu Leu Leu Thr Phe Leu Thr Leu Glu Lys Tyr Ile
            500                 505                 510
Cys Ile Val Tyr Pro Phe Arg Cys Val Arg Pro Gly Lys Cys Arg Thr
        515                 520                 525
Ile Thr Val Leu Ile Leu Ile Trp Ile Thr Gly Phe Ile Val Ala Phe
    530                 535                 540
Ile Pro Leu Ser Asn Lys Glu Phe Phe Lys Asn Tyr Tyr Gly Thr Asn
545                 550                 555                 560
Gly Val Cys Phe Pro Leu His Ser Glu Asp Thr Glu Ser Ile Gly Ala
                565                 570                 575
Gln Ile Tyr Ser Val Ala Ile Phe Leu Gly Ile Asn Leu Ala Ala Phe
            580                 585                 590
Ile Ile Ile Val Phe Ser Tyr Gly Ser Met Phe Tyr Ser Val His Gln
        595                 600                 605
Ser Ala Ile Thr Ala Thr Glu Ile Arg Asn Gln Val Lys Lys Glu Met
    610                 615                 620
Ile Leu Ala Lys Arg Phe Phe Phe Ile Val Phe Thr Asp Ala Leu Cys
625                 630                 635                 640
Trp Ile Pro Ile Phe Val Val Lys Phe Leu Ser Leu Leu Gln Val Glu
                645                 650                 655
Ile Pro Gly Thr Ile Thr Ser Trp Val Val Ile Phe Ile Leu Pro Ile
            660                 665                 670
Asn Ser Ala Leu Asn Pro Ile Leu Tyr Thr Leu Thr Thr Arg Pro Phe
        675                 680                 685
Lys Glu Met Ile His Arg Phe Trp Tyr Asn Tyr Arg Gln Arg Lys Ser
    690                 695                 700
Met Asp Ser Lys Gly Gln Lys Thr Tyr Ala Pro Ser Phe Ile Trp Val
705                 710                 715                 720
Glu Met Trp Pro Leu Gln Glu Met Pro Pro Glu Leu Met Lys Pro Asp
                725                 730                 735
Leu Phe Thr Tyr Pro Cys Glu Met Ser Leu Ile Ser Gln Ser Thr Arg
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Leu Asn Ser Tyr Ser
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a8

<210> 7
<211> 3584
<212> DNA
<213> homo sapiens

<220>
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<222> 3427, 3496, 3531, 3568
<223> n = A,T,C or G

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gaaatgacat ctggttctgt cttcttctac atcttaattt ttggaaaata tttttctcat 180
gggggtggac aggatgtcaa gtgctcccct ggctatttcc cctgtgggaa catcacaaag 240
tgcttgcctc agctcctgca ctgtaacggt gtggacgact gcgggaatca ggccgatgag 300
gacaactgtg tggtggtttt gtgccagtgc atgtctttgc caggtctgga gcttgactgg 360
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tggaacttaa taagaaagct tcctcctgat tgcttcaaga attatcatga tcttcagaag 480
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gaagatcttc acagactaga atggctgata attgaagata atcacctcag tcgaatttcc 660
ccaccaacat tttatggact aaattctctt attctcttag tcctgatgaa taacgtcctc 720
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tctacttcag taacattcat tcatttttct aacatgcatt tattgagtac ccactactat 2580
gtgcatagca ttgcaatata gtcctggaag tagacagtgc agaacctttc aatctgtaga 2640
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ctttacctgt catgtgcatc agcaagaatc ataggcactt ttaaataaag gtttaaagtt 2760
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gatagtttca aatacnccaa aaatgtttgc aacacaaaaa tactggaatc naaccataat 3540
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<210> 8
<211> 722
<212> PRT
<213> homo sapiens

<400> 8

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Met Thr Ser Gly Ser Val Phe Phe Tyr Ile Leu Ile Phe Gly Lys Tyr
 1               5                  10                  15
Phe Ser His Gly Gly Gly Gln Asp Val Lys Cys Ser Leu Gly Tyr Phe
            20                  25                  30
Pro Cys Gly Asn Ile Thr Lys Cys Leu Pro Gln Leu Leu His Cys Asn
        35                  40                  45
Gly Val Asp Asp Cys Gly Asn Gln Ala Asp Glu Asp Asn Cys Val Val
    50                  55                  60
Val Leu Cys Gln Cys Met Ser Leu Pro Gly Leu Glu Leu Asp Trp Met
65                  70                  75                  80
Lys Pro Phe Thr Ser Val Pro Ser Val Ser Ser Asn Val Thr Ala Met
                85                  90                  95
Ser Leu Gln Trp Asn Leu Ile Arg Lys Leu Pro Pro Asp Cys Phe Lys
            100                 105                 110
Asn Tyr His Asp Leu Gln Lys Leu Asp Leu Gln Asn Asn Lys Ile Thr
        115                 120                 125
Ser Ile Ser Ile Tyr Ala Phe Arg Gly Leu Asn Ser Leu Thr Lys Leu
    130                 135                 140
Tyr Leu Ser His Asn Arg Ile Thr Phe Leu Lys Pro Gly Val Phe Glu
145                 150                 155                 160
Asp Leu His Arg Leu Glu Trp Leu Ile Ile Glu Asp Asn His Leu Ser
                165                 170                 175
Arg Ile Ser Pro Pro Thr Phe Tyr Gly Leu Asn Ser Leu Ile Leu Leu
            180                 185                 190
Val Leu Met Asn Asn Val Leu Thr Arg Leu Pro Asp Lys Pro Leu Cys
        195                 200                 205
Gln His Met Pro Arg Leu His Trp Leu Asp Leu Glu Gly Asn His Ile
    210                 215                 220
His Asn Leu Arg Asn Leu Thr Phe Ile Ser Cys Ser Asn Leu Thr Val
```

225 230 235 240
Leu Val Met Arg Lys Asn Lys Ile Asn His Leu Asn Glu Asn Thr Phe
245 250 255
Ala Pro Leu Gln Lys Leu Asp Glu Leu Asp Leu Gly Ser Asn Lys Ile
260 265 270
Glu Asn Leu Pro Pro Leu Ile Phe Lys Asp Leu Lys Glu Leu Ser Gln
275 280 285
Leu Asn Leu Ser Tyr Asn Pro Ile Gln Lys Ile Gln Ala Asn Gln Phe
290 295 300
Asp Tyr Leu Val Lys Leu Lys Ser Leu Ser Leu Glu Gly Ile Glu Ile
305 310 315 320
Ser Asn Ile Gln Gln Arg Met Phe Arg Pro Leu Met Asn Leu Ser His
325 330 335
Ile Tyr Phe Lys Lys Phe Gln Tyr Cys Gly Tyr Ala Pro His Val Arg
340 345 350
Ser Cys Lys Pro Asn Thr Asp Gly Ile Ser Ser Leu Glu Asn Leu Leu
355 360 365
Ala Ser Ile Ile Gln Arg Val Phe Val Trp Val Val Ser Ala Val Thr
370 375 380
Cys Phe Gly Asn Ile Phe Val Ile Cys Met Arg Pro Tyr Ile Arg Ser
385 390 395 400
Glu Asn Lys Leu Tyr Ala Met Ser Ile Ile Ser Leu Cys Cys Ala Asp
405 410 415
Cys Leu Met Gly Ile Tyr Leu Phe Val Ile Gly Gly Phe Asp Leu Lys
420 425 430
Phe Arg Gly Glu Tyr Asn Lys His Ala Gln Leu Trp Met Glu Ser Thr
435 440 445
His Cys Gln Leu Val Gly Ser Leu Ala Ile Leu Ser Thr Glu Val Ser
450 455 460
Val Leu Leu Leu Thr Phe Leu Thr Leu Glu Lys Tyr Ile Cys Ile Val
465 470 475 480
Tyr Pro Phe Arg Cys Val Arg Pro Gly Lys Cys Arg Thr Ile Thr Val
485 490 495
Leu Ile Leu Ile Trp Ile Thr Gly Phe Ile Val Ala Phe Ile Pro Leu
500 505 510
Ser Asn Lys Glu Phe Phe Lys Asn Tyr Tyr Gly Thr Asn Gly Val Cys
515 520 525
Phe Pro Leu His Ser Glu Asp Thr Glu Ser Ile Gly Ala Gln Ile Tyr
530 535 540
Ser Val Ala Ile Phe Leu Gly Ile Asn Leu Ala Ala Phe Ile Ile Ile
545 550 555 560
Val Phe Ser Tyr Gly Ser Met Phe Tyr Ser Val His Gln Ser Ala Ile
565 570 575
Thr Ala Thr Glu Ile Arg Asn Gln Val Lys Lys Glu Met Ile Leu Ala
580 585 590
Lys Arg Phe Phe Phe Ile Val Phe Thr Asp Ala Leu Cys Trp Ile Pro
595 600 605
Ile Phe Val Val Lys Phe Leu Ser Leu Leu Gln Val Glu Ile Pro Gly
610 615 620
Thr Ile Thr Ser Trp Val Val Ile Phe Ile Leu Pro Ile Asn Ser Ala
625 630 635 640

```
Leu Asn Pro Ile Leu Tyr Thr Leu Thr Thr Arg Pro Phe Lys Glu Met
                645                 650                 655
Ile His Arg Phe Trp Tyr Asn Tyr Arg Gln Arg Lys Ser Met Asp Ser
            660                 665                 670
Lys Gly Gln Lys Thr Tyr Ala Pro Ser Phe Ile Trp Val Glu Met Trp
        675                 680                 685
Pro Leu Gln Glu Met Pro Pro Glu Leu Met Lys Pro Asp Leu Phe Thr
    690                 695                 700
Tyr Pro Cys Glu Met Ser Leu Ile Ser Gln Ser Thr Arg Leu Asn Ser
705                 710                 715                 720
Tyr Ser
```

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<210> 9
<211> 707
<212> PRT
<213> homo sapiens

<400> 9
Met Thr Ser Gly Ser Val Phe Phe Tyr Ile Leu Ile Phe Gly Lys Tyr
 1               5                  10                  15
Phe Ser His Gly Gly Gly Gln Asp Val Lys Cys Ser Leu Gly Tyr Phe
            20                  25                  30
Pro Cys Gly Asn Ile Thr Lys Cys Leu Pro Gln Leu Leu His Cys Asn
        35                  40                  45
Gly Val Asp Asp Cys Gly Asn Gln Ala Asp Glu Asp Asn Cys Val Val
    50                  55                  60
Cys Cys Gly Leu Glu Leu Asp Val Pro Ser Val Ser Ser Asn Val Thr
65                  70                  75                  80
Ala Met Ser Leu Gln Trp Asn Leu Ile Arg Lys Leu Pro Pro Asp Cys
                85                  90                  95
Phe Lys Asn Tyr His Asp Leu Gln Lys Leu Leu Gln Asn Asn Lys Ile
            100                 105                 110
Thr Ser Ile Ser Ile Tyr Ala Phe Arg Gly Leu Asn Ser Leu Thr Lys
        115                 120                 125
Leu Tyr Leu Ser His Asn Arg Ile Thr Phe Leu Lys Pro Gly Val Phe
    130                 135                 140
Glu Asp Leu His Arg Leu Glu Trp Leu Ile Ile Glu Asp Asn His Leu
145                 150                 155                 160
Ser Arg Ile Ser Pro Pro Thr Phe Tyr Gly Leu Asn Ser Leu Ile Leu
                165                 170                 175
Leu Val Leu Met Asn Asn Val Leu Thr Arg Leu Pro Asp Lys Pro Leu
            180                 185                 190
Cys Gln His Met Pro Arg Leu His Trp Leu Asp Leu Glu Gly Asn His
        195                 200                 205
Ile His Asn Leu Arg Asn Leu Thr Phe Ile Ser Cys Ser Asn Leu Thr
    210                 215                 220
Val Leu Val Met Arg Lys Asn Lys Ile Asn His Leu Asn Glu Asn Thr
225                 230                 235                 240
Phe Ala Pro Leu Gln Lys Leu Asp Glu Leu Asp Leu Gly Ser Asn Lys
```

Q8

```
                245                 250                 255
Ile Glu Asn Leu Pro Pro Leu Ile Phe Lys Asp Leu Lys Glu Leu Ser
            260                 265                 270
Gln Leu Asn Leu Ser Tyr Asn Pro Ile Gln Lys Ile Gln Ala Asn Gln
        275                 280                 285
Phe Asp Tyr Leu Val Lys Leu Lys Ser Leu Ser Leu Glu Gly Ile Glu
    290                 295                 300
Ile Ser Asn Ile Gln Gln Arg Met Phe Arg Pro Leu Met Asn Leu Ser
305                 310                 315                 320
His Ile Tyr Phe Lys Lys Phe Gln Tyr Cys Gly Tyr Ala Pro His Val
                325                 330                 335
Arg Ser Cys Lys Pro Asn Thr Asp Gly Ile Ser Ser Leu Glu Asn Leu
            340                 345                 350
Leu Ala Ser Ile Ile Gln Arg Val Phe Val Trp Val Val Ser Ala Val
        355                 360                 365
Thr Cys Phe Gly Asn Ile Phe Val Ile Cys Met Arg Pro Tyr Ile Arg
    370                 375                 380
Ser Glu Asn Lys Leu Tyr Ala Met Ser Ile Ile Ser Leu Cys Cys Ala
385                 390                 395                 400
Asp Cys Leu Met Gly Ile Tyr Leu Phe Val Ile Gly Gly Phe Asp Leu
                405                 410                 415
Lys Phe Arg Gly Glu Tyr Asn Lys His Ala Gln Leu Trp Met Glu Ser
            420                 425                 430
Thr His Cys Gln Leu Val Gly Ser Leu Ala Ile Leu Ser Thr Glu Val
        435                 440                 445
Ser Val Leu Leu Leu Thr Phe Leu Thr Leu Glu Lys Tyr Ile Cys Ile
    450                 455                 460
Val Tyr Pro Phe Arg Cys Val Arg Pro Gly Lys Cys Arg Thr Ile Thr
465                 470                 475                 480
Val Leu Ile Leu Ile Trp Ile Thr Gly Phe Ile Val Ala Phe Ile Pro
                485                 490                 495
Leu Ser Asn Lys Glu Phe Phe Lys Asn Tyr Tyr Gly Thr Asn Gly Val
            500                 505                 510
Cys Phe Pro Leu His Ser Glu Asp Thr Glu Ser Ile Gly Ala Gln Ile
        515                 520                 525
Tyr Ser Val Ala Ile Phe Leu Gly Ile Asn Leu Ala Ala Phe Ile Ile
    530                 535                 540
Ile Val Phe Ser Tyr Gly Ser Met Phe Tyr Ser Val His Gln Ser Ala
545                 550                 555                 560
Ile Thr Ala Thr Glu Ile Arg Asn Gln Val Lys Lys Glu Met Ile Leu
                565                 570                 575
Ala Lys Arg Phe Phe Phe Ile Val Phe Thr Asp Ala Leu Cys Trp Ile
            580                 585                 590
Pro Ile Phe Val Val Lys Phe Leu Ser Leu Leu Gln Val Glu Ile Pro
        595                 600                 605
Gly Thr Ile Thr Ser Trp Val Val Ile Phe Ile Leu Pro Ile Asn Ser
    610                 615                 620
Ala Leu Asn Pro Ile Leu Tyr Thr Leu Thr Thr Arg Pro Phe Lys Glu
625                 630                 635                 640
Met Ile His Arg Phe Trp Tyr Asn Tyr Arg Gln Arg Lys Ser Met Asp
                645                 650                 655
```

```
Ser Lys Gly Gln Lys Thr Tyr Ala Pro Ser Phe Ile Trp Val Glu Met
            660                 665                 670
Trp Pro Leu Gln Glu Met Pro Pro Glu Leu Met Lys Pro Asp Leu Phe
        675                 680                 685
Thr Tyr Pro Cys Glu Met Ser Leu Ile Ser Gln Ser Thr Arg Leu Asn
    690                 695                 700
Ser Tyr Ser
705
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<210> 10
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> signal peptide

<400> 10
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Met Pro Gly Pro Leu Gly Leu Leu Cys Phe Leu Ala Leu Gly Leu Leu
 1               5                  10                  15
Gly Ser Ala Gly Pro Ser Gly Ala
            20
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<210> 11
<211> 21
<212> PRT
<213> Artificial Sequence

Q8

<220>
<223> signal peptide

<400> 11
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Met Asp Thr Ser Arg Leu Gly Val Leu Leu Ser Leu Pro Val Leu Leu
 1               5                  10                  15
Gln Leu Ala Thr Gly
            20
```

<210> 12
<211> 24
<212> PRT
<213> Artificial Sequence

<220>
<223> signal peptide

<400> 12
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Met Lys Gln Arg Phe Ser Ala Leu Gln Leu Leu Lys Leu Leu Leu Leu
 1               5                  10                  15
Leu Gln Pro Pro Leu Pro Arg Ala
            20
```

<210> 13
<211> 17
<212> PRT
<213> Artificial Sequence

<220>
<223> signal peptide

<400> 13
Met Ala Leu Leu Leu Val Ser Leu Leu Ala Phe Leu Ser Leu Gly Ser
 1   5   10   15
Gly

<210> 14
<211> 21
<212> PRT
<213> Artificial Sequence

<220>
<223> signal peptide

<400> 14
Met Arg Pro Ala Asp Leu Leu Gln Leu Val Leu Leu Leu Asp Leu Pro
 1   5   10   15
Arg Asp Leu Gly Gly
            20

<210> 15
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> N-flank cysteine-rich sequence

<400> 15
Ala Pro Pro Leu Ala Ala Pro Ser Asp Gly Asp Arg Arg Val Asp Ser
 1   5   10   15
Gly Lys Gly Leu Thr Ala Val Pro Glu Gly Leu Ser Ala Phe Thr Gln
            20   25   30
Ala

<210> 16
<211> 45
<212> PRT
<213> Artificial Sequence

<220>
<223> N-flank cysteine-rich sequence

<400> 16
Gly Ser Ser Pro Arg Ser Gly Val Leu Leu Arg Gly Pro Thr His His
 1   5   10   15
Glu Pro Asp Gly Arg Met Leu Leu Arg Val Asp Ser Asp Leu Gly Leu
            20   25   30
Ser Glu Leu Pro Ser Asn Leu Ser Val Phe Thr Ser Tyr
        35   40   45

<210> 17
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> N-flank cysteine-rich sequence

<400> 17
Leu Arg Glu Ala Leu Pro Glu Pro Asn Val Pro Asp Gly Ala Leu Arg
 1   5   10   15
Pro Gly Pro Thr Ala Gly Leu Thr Arg
            20   25

<210> 18
<211> 29
<212> PRT
<213> Artificial Sequence

Q8

<220>
<223> N-flank cysteine-rich sequence

<400> 18
His His Arg Ile His Ser Asn Arg Val Phe Leu Gln Glu Ser Lys Val
 1   5   10   15
Thr Glu Ile Pro Ser Asp Leu Pro Arg Asn Ala Ile Glu
            20   25

<210> 19
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> N-flank cysteine-rich sequence

<400> 19
Met Gly Ser Ser Pro Pro Glu His Gln Glu Glu Asp Phe Arg Val Thr
 1   5   10   15
Lys Asp Ile Gln Arg Ile Pro Ser Leu Pro Pro Ser Thr Gln Thr
            20   25   30

<210> 20

<211> 332
<212> PRT
<213> Artificial Sequence

<220>
<223> Leucine-rich repeats

<400> 20

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Asp Ile Ser Met Asn Asn Ile Thr Gln Leu Pro Glu Asp Lys Ser Phe
 1               5                  10                  15
Pro Phe Leu Glu Glu Leu Gln Leu Ala Gly Asn Ser Leu His Pro Lys
            20                  25                  30
Ala Leu Ser Gly Lys Glu Lys Val Leu Thr Leu Gln Gln Arg Thr Val
        35                  40                  45
Ser Glu Ile His Gly Ser Ala Gln Ser Arg Leu Asp Ala His Thr Ser
    50                  55                  60
Val Glu Asp Ser Phe Glu Gly Leu Val Gln Leu Arg His Trp Leu Asp
65                  70                  75                  80
Ser Leu Glu Val Val Arg Pro Leu Ser Asn Pro Thr Leu Gln Ala Thr
                85                  90                  95
Ala Leu Asn Ile Ser Ser Ile Pro Asp Phe Thr Leu Ser Ser Val Val
            100                 105                 110
His His Asn Lys Ile Lys Ser Leu Ser Gln His Cys Asp Leu Asp Asn
        115                 120                 125
Leu Glu Thr Leu Asn Tyr Asn Tyr Leu Asp Glu Phe Gln Ala Ile Lys
    130                 135                 140
Ala Pro Ser Lys Glu Leu Gly Phe His Ser Asn Ser Ile Ser Val Ile
145                 150                 155                 160
Asp Gly Ala Gly Gly Asn Pro Leu Arg Thr Ile His Asp Asn Pro Leu
                165                 170                 175
Ser Phe Val Gly Asn Ser Ala Phe His Asn Leu Ser Asp Leu His Cys
            180                 185                 190
Leu Val Ile Arg Gly Ala Ser Leu Val Gln Trp Phe Pro Asn Leu Thr
        195                 200                 205
Gly Thr Val His Leu Glu Ser Leu Thr Leu Thr Gly Thr Lys Ile Ser
    210                 215                 220
Ser Ile Pro Asp Asp Leu Cys Gln Asn Gln Lys Met Leu Arg Thr Leu
225                 230                 235                 240
Asp Leu Ser Tyr Asn Asn Ile Arg Asp Leu Pro Ser Phe Asn Gly Cys
                245                 250                 255
Arg Ala Leu Glu Glu Ile Ser Leu Gln Arg Asn Gln Ile Ser Leu Ile
            260                 265                 270
Lys Glu Asn Thr Phe Gln Gly Leu Thr Ser Leu Arg Ile Leu Asp Leu
        275                 280                 285
Ser Arg Asn Leu Ile Arg Glu Ile His Ser Gly Ala Phe Ala Lys Leu
    290                 295                 300
Gly Thr Ile Thr Asn Leu Asp Val Ser Phe Asn Glu Leu Thr Ser Phe
305                 310                 315                 320
Pro Thr Glu Gly Leu Asn Gly Leu Asn Gln Leu Lys
                325                 330
```

<210> 21
<211> 335
<212> PRT
<213> Artificial Sequence

<220>
<223> Leucine-rich repeats

<400> 21

```
Asp Leu Ser Met Asn Asn Ile Ser Gln Leu Leu Pro Asn Pro Leu Pro
 1               5                  10                  15
Ser Leu His Phe Leu Glu Glu Leu Arg Leu Ala Gly Asn Ala Thr Tyr
            20                  25                  30
Pro Lys Gly Ala Thr Gly Tyr Ser Lys Val Leu Met Leu Gln Gln Arg
        35                  40                  45
His Val Thr Glu Leu Gln Asn Arg Ser Gln Ser Arg Leu Asp Ala His
    50                  55                  60
Ser Tyr Val Pro Ser Cys Phe Ser Gly Leu His Ser Leu Arg His Trp
65                  70                  75                  80
Leu Asp Ala Leu Glu Val Gln Ala Arg Ser Ser Ala Leu Gln Ala Met
                85                  90                  95
Thr Ala Leu Lys Ile His His Ile Pro Asp Tyr Gly Leu Ser Ser Trp
            100                 105                 110
Val Val His His Asn Arg Ile His Ser Leu Gly Lys Lys Cys Asp Leu
        115                 120                 125
His Ser Leu Glu Thr Leu Asn Tyr Asn Asn Leu Asp Glu Phe Thr Ala
    130                 135                 140
Ile Arg Thr Ser Asn Lys Glu Leu Gly Phe His Ser Asn Asn Ile Arg
145                 150                 155                 160
Ser Ile Glu Lys Ala Val Gly Asn Pro Ser Ile Thr Ile His Phe Asp
                165                 170                 175
Asn Pro Ile Gln Phe Val Gly Arg Ser Ala Phe Gln His Leu Pro Glu
            180                 185                 190
Leu Arg Thr Leu Thr Leu Asn Gly Ala Ser Gln Ile Thr Glu Phe Pro
        195                 200                 205
Asp Leu Thr Gly Thr Ala Asn Leu Glu Ser Leu Thr Leu Thr Gly Ala
    210                 215                 220
Gln Ile Ser Ser Leu Pro Gln Thr Val Cys Asn Gln Leu Pro Asn Leu
225                 230                 235                 240
Gln Val Leu Asp Leu Ser Tyr Asn Leu Leu Glu Asp Leu Pro Ser Phe
                245                 250                 255
Ser Val Cys Gln Lys Leu Gln Lys Ile Asp Leu Arg His Asn Glu Ile
            260                 265                 270
Tyr Glu Ile Lys Val Asp Thr Phe Gln Gln Leu Leu Ser Leu Arg Ser
        275                 280                 285
Leu Asn Leu Ala Trp Asn Lys Ile Ala Ile Ile His Pro Asn Ala Phe
    290                 295                 300
Ser Thr Leu Pro Ser Leu Ile Lys Leu Asp Leu Ser Ser Asn Leu Leu
305                 310                 315                 320
Ser Ser Phe Pro Ile Thr Gly Leu His Gly Leu Thr His Leu Lys
                325                 330                 335
```

<210> 22
<211> 174
<212> PRT
<213> Artificial Sequence

<220>
<223> Leucine-rich repeats

<400> 22
Ser Leu Ala Tyr Leu Pro Val Lys Val Ile Pro Ser Gln Arg Gly Leu
 1   5   10   15
Asn Glu Val Ile Lys Ile Glu Ile Ser Gln Ile Ser Glu Arg Glu Ala
            20   25   30
Asn Ala Asp Asn Leu Asn Ser Glu Ile Leu Ile Gln Thr Lys Arg Tyr
        35   40   45
Ile Glu Gly Phe Ile Asn Pro Gly Lys Tyr Ser Ile Cys Thr Gly Arg
    50   55   60
Lys Phe Asp Val Thr Lys Val Phe Ser Ser Glu Ser Asn Phe Ile Glu
65   70   75   80
Ile Cys Leu His Ile Thr Gly Asn Ala Gln Gly Met Asn Asn Glu Ser
                85   90   95
Val Thr Lys Tyr Gly Gly Phe Glu Glu Val Gln Ser His Gly Thr Thr
            100   105   110
Thr Ser Glu Lys Glu Val His Leu Glu Lys Met His Asn Gly Ala Arg
        115   120   125
Ala Thr Gly Pro Lys Thr Ile Ser Ser Thr Lys Leu Gln Ala Leu Ser
    130   135   140
Tyr Gly Leu Glu Ser Ile Gln Arg Ile Ala Thr Ser Ser Tyr Ser Leu
145   150   155   160
Lys Lys Leu Ser Arg Glu Thr Val Asn Leu Glu Ala Thr Thr
                165   170

<210> 23
<211> 174
<212> PRT
<213> Artificial Sequence

<220>
<223> Leucine-rich repeats

<400> 23
Arg Phe Val Leu Thr Lys Leu Arg Val Ile Gln Lys Gly Ser Gly Phe
 1   5   10   15
Gly Asp Leu Glu Lys Ile Glu Ile Ser Gln Asn Val Glu Val Glu Ala
            20   25   30
Asp Val Ser Asn Pro Lys His Glu Ile Arg Ile Glu Lys Ala Asn Leu
        35   40   45
Tyr Ile Asn Glu Phe Gln Asn Pro Asn Gln Tyr Leu Ile Ser Thr Gly
    50   55   60
Lys His Leu Asp Val His Lys Ile His Ser Leu Gln Lys Val Leu Asp
65   70   75   80

Ile Gln Ile Asn Ile His Glu Arg Asn Ser Val Gly Ser Phe Glu Ser
85 90 95
Val Ile Trp Asn Lys Gly Ile Gln Glu Ile His Asn Cys Gly Thr Gln
100 105 110
Asp Glu Asn Ser Asp Asn Asn Leu Glu Glu Leu Pro Asn Asp Val His
115 120 125
Ala Ser Gly Pro Val Ile Ile Ser Arg Thr Arg Ile His Ser Leu Ser
130 135 140
Tyr Gly Leu Glu Asn Lys Lys Arg Ala Arg Ser Thr Tyr Asn Leu Lys
145 150 155 160
Lys Leu Thr Leu Glu Lys Leu Val Ala Met Glu Ala Ser Thr
165 170

<210> 24
<211> 177
<212> PRT
<213> Artificial Sequence

<220>
<223> Leucine-rich repeats

<400> 24
Lys Leu Ile Glu Thr His Leu Arg Thr Ile Pro Ser His Ser Asn Leu
1 5 10 15
Pro Asn Ile Ser Arg Ile Tyr Val Ser Ile Val Thr Gln Gln Leu Glu
20 25 30
Ser His Ser Tyr Asn Ser Lys Val Thr His Ile Glu Ile Arg Thr Arg
35 40 45
Thr Tyr Ile Asp Asp Leu Lys Glu Pro Leu Lys Phe Gly Ile Phe Thr
50 55 60
Gly Leu Lys Met Phe Asp Leu Thr Lys Val Tyr Ser Thr Asp Ile Phe
65 70 75 80
Phe Ile Glu Ile Thr Pro Tyr Met Ser Val Asn Ala Gln Gly Cys Asn
85 90 95
Glu Thr Leu Thr Lys Tyr Asn Gly Phe Thr Ser Val Gln Gly Tyr Gly
100 105 110
Thr Lys Asp Ala Val Tyr Asn Lys Lys Tyr Leu Thr Val Ile Asp Lys
115 120 125
Asp Ala Gly Val Tyr Ser Gly Pro Ser Leu Val Ser Gln Thr Ser Val
130 135 140
Thr Ala Leu Ser Lys Gly Leu Glu His Lys Glu Ile Ala Arg Asn Thr
145 150 155 160
Trp Thr Leu Lys Lys Leu Leu Ser Leu Ser Leu His Thr Arg Ala Asp
165 170 175
Ser

<210> 25
<211> 89
<212> PRT
<213> Artificial Sequence

<220>
<223> C-flank cysteine-rich sequence

<400> 25
Leu Val Gly Asn Phe Lys Leu Lys Asp Ala Leu Ala Ala Arg Asp Phe
 1   5   10   15
Ala Asn Leu Arg Ser Leu Ser Val Tyr Ala Tyr Gln Trp Gly Cys Asp
            20   25   30
Ser Leu Cys Lys Leu Asn Thr Glu Asp Asn Ser Pro Gln Glu His Ser
        35   40   45
Val Thr Lys Glu Lys Gly Ala Thr Asp Ala Ala Asn Val Thr Ser Thr
    50   55   60
Ala Glu Asn Glu His Ser Gln Ile Ile Ile His Thr Ser Thr Gly Ala
65   70   75   80
Lys Tyr Leu Leu Gly Ser Trp Met Ile
                85

<210> 26
<211> 99
<212> PRT
<213> Artificial Sequence

<220>
<223> C-flank cysteine-rich sequence

<400> 26
Leu Thr Gly Asn His Ala Leu Gln Ser Leu Ile Ser Ser Glu Asn Phe
 1   5   10   15
Pro Glu Leu Lys Val Ile Glu Met Tyr Ala Tyr Gln Gly Val Cys Glu
            20   25   30
Asn Ala Tyr Lys Ile Ser Asn Gln Trp Asn Lys Gly Asp Asn Ser Ser
        35   40   45
Met Asp Asp Leu His Lys Lys Asp Ala Gly Met Phe Gln Ala Gln Asp
    50   55   60
Glu Arg Asp Leu Asp Phe Leu Leu Asp Phe Glu Glu Asp Leu Lys Ala
65   70   75   80
Leu His Ser Val Gln Ser Ser Pro Gly Pro Lys His Leu Leu Asp Gly
                85   90   95
Trp Leu Ile

<210> 27
<211> 75
<212> PRT
<213> Artificial Sequence

<220>
<223> C-flank cysteine-rich sequence

<400> 27
Ser His Arg Asn Leu Pro Thr Lys Glu Gln Asn Phe Ser His Ser Ile

```
 1               5                  10                  15
Ser Glu Asn Phe Ser Lys Gln Cys Glu Ser Thr Val Arg Lys Val Ser
            20                  25                  30
Asn Lys Thr Leu Tyr Ser Ser Met Leu Ala Ser Glu Leu Ser Gly Trp
        35                  40                  45
Asp Tyr Glu Tyr Gly Phe Cys Leu Pro Lys Thr Pro Arg Ala Glu Pro
    50                  55                  60
Asp Ala Asn Asp Ile Met Gly Tyr Asp Phe Leu
65                  70                  75
```

<210> 28
<211> 82
<212> PRT
<213> Artificial Sequence

<220>
<223> C-flank cysteine-rich sequence

<400> 28

```
Ser His Ala Asn Trp Arg Arg Gln Ile Ser Glu Leu His Pro Ile Cys
 1               5                  10                  15
Asn Lys Ser Ile Leu Arg Gln Glu Val Asp Tyr Met Thr Gln Thr Arg
            20                  25                  30
Gly Gln Arg Ser Ser Leu Ala Glu Asp Asn Ser Ser Tyr Ser Arg Gly
        35                  40                  45
Phe Asp Met Thr Tyr Thr Glu Phe Asp Tyr Asp Leu Cys Asn Glu Val
    50                  55                  60
Val Asp Val Thr Ser Lys Pro Asp Ala Asn Asp Ile Met Gly Tyr Asn
65                  70                  75                  80
Ile Leu
```

<210> 29
<211> 126
<212> PRT
<213> Artificial Sequence

<220>
<223> C-flank cysteine-rich sequence

<400> 29

```
Ser His Lys Asn Gln Lys Lys Ile Arg Gly Ile Leu Glu Ser Leu Met
 1               5                  10                  15
Cys Asn Glu Ser Ser Met Gln Ser Leu Arg Gln Arg Lys Ser Val Asn
            20                  25                  30
Ala Leu Asn Ser Pro Leu His Gln Glu Tyr Glu Asn Leu Gly Asp Ser
        35                  40                  45
Ile Val Gly Tyr Lys Glu Lys Ser Lys Phe Gln Asp Thr His Asn Asn
    50                  55                  60
Ala His Tyr Tyr Val Phe Phe Glu Glu Gln Glu Asp Glu Ile Ile Gly
65                  70                  75                  80
```

```
Phe Gly Gln Glu Leu Lys Asn Pro Gln Glu Glu Thr Leu Gln Ala Phe
                85                  90                  95
Asp Ser His Tyr Asp Tyr Thr Ile Cys Gly Asp Ser Glu Asp Met Val
            100                 105                 110
Thr Lys Ser Asp Glu Asn Asp Ile Met Gly Tyr Lys Phe Leu
        115                 120                 125

<210> 30
<211> 204
<212> PRT
<213> Artificial Sequence

<220>
<223> Transmembrane

<400> 30
Leu Thr Val Phe Phe Leu Val Leu Leu Phe Leu Leu Ile Leu Thr Val
 1               5                  10                  15
Phe Ala Cys Ser Ser Pro Ala Ser Lys Leu Phe Ile Gly Leu Ile Ser
            20                  25                  30
Val Ser Asn Leu Leu Met Ile Tyr Thr Gly Ile Leu Thr Phe Leu Ala
        35                  40                  45
Val Ser Trp Gly Arg Phe Ala Glu Phe Gly Trp Glu Ser Lys Val Ser
    50                  55                  60
Leu Ala Ser Ser Ala Phe Leu Leu Ala Ala Val Ser Val Phe Ala Lys
65                  70                  75                  80
Asp Leu Met Lys His Gly Lys Ser Ser His Gln Phe Gln Val Ala Ala
                85                  90                  95
Leu Leu Ala Leu Leu Gly Ala Ala Val Ala Gly Cys Phe Phe His Gly
            100                 105                 110
Gly Gln Ser Ala Ser Pro Leu Phe Pro Thr Gly Glu Thr Pro Ser Leu
        115                 120                 125
Gly Phe Thr Val Thr Leu Val Leu Ser Leu Leu Leu Met Ala Ile Ile
    130                 135                 140
Thr Leu Cys Asn Leu Glu Lys Glu Asp Leu Ser Glu Asn Ser Gln Ser
145                 150                 155                 160
Ser Val Ile His Val Trp Asn Cys Ile Phe Phe Cys Val Ala Phe Ser
                165                 170                 175
Phe Ala Pro Leu Ile Thr Ala Ile Ser Ser Pro Glu Ile Met Ser Val
            180                 185                 190
Thr Leu Ile Phe Leu Pro Ala Leu Val Val Phe Asn
        195                 200

<210> 31
<211> 197
<212> PRT
<213> Artificial Sequence

<220>
<223> Transmembrane
```

<400> 31
Ile Gly Val Thr Ala Val Leu Thr Cys Ala Leu Thr Ser Thr Val Phe
 1   5   10   15
Arg Pro Leu Tyr Ile Ser Pro Ile Lys Leu Ile Gly Val Ile Ala Ala
            20   25   30
Val Asn Met Leu Thr Val Ser Ser Ala Val Leu Gly Ala Phe Phe Gly
        35   40   45
Ser Phe Ala Arg His Gly Ala Trp Glu Asn Val His Val Ile Leu Ser
    50   55   60
Ile Ser Phe Leu Leu Ala Ala Gly Phe Ser Val Lys Tyr Ser Ala Lys
65   70   75   80
Phe Glu Thr Ala Pro Phe Ser Ser Leu Lys Val Ile Ile Leu Leu Cys
                85   90   95
Ala Leu Leu Ala Leu Thr Met Ala Val Leu Gly Lys Gly Ala Ser Pro
            100   105   110
Leu Leu Pro Phe Gly Glu Pro Ser Thr Met Gly Met Val Ala Leu Ile
        115   120   125
Leu Ser Leu Cys Leu Met Met Thr Ile Ala Thr Leu Cys Asn Leu Asp
    130   135   140
Lys Gly Asp Leu Glu Asn Ile Trp Cys Ser Met Val His Ile Leu Leu
145   150   155   160
Asn Cys Ile Leu Asn Cys Val Ala Leu Ser Phe Ser Leu Ile Asn Leu
                165   170   175
Thr Phe Ser Pro Glu Val Ile Phe Ile Leu Val Val Val Leu Pro Ala
            180   185   190
Leu Leu Ile Leu Asn
        195

<210> 32
<211> 189
<212> PRT
<213> Artificial Sequence

<220>
<223> Transmembrane

<400> 32
Val Leu Ile Leu Asn Ile Ile Met Gly Met Thr Leu Phe Val Leu Leu
 1   5   10   15
Thr Arg Tyr Lys Thr Val Pro Arg Phe Met Cys Asn Leu Ser Phe Ala
            20   25   30
Asp Phe Cys Met Leu Tyr Leu Leu Leu Ile Ser Ser Gln Lys Gly Gln
        35   40   45
Tyr Tyr Asn His Ala Asp Gln Ser Ser Thr Phe Thr Leu Tyr Thr Val
    50   55   60
Ile Thr Trp His Thr Ile Thr Tyr Ala Ile His Leu Asp Gln Leu Arg
65   70   75   80
His Ala Ile Leu Ile Met Leu Gly Gly Trp Leu Phe Ser Ser Leu Ile
                85   90   95
Met Leu Val Val Asn Met Lys Val Ser Ile Phe Met Asp Val Glu Thr
            100   105   110

Thr Leu Ser Gln Val Ile Leu Thr Ile Leu Ile Val Val Phe Ile Ile
115 120 125
Cys Ala Cys Ile Ile Phe Ala Val Arg Asn Pro Glu Leu Met Ala Thr
130 135 140
Asn Lys Thr Lys Ile Ala Lys Met Ile Asp Phe Thr Cys Met Ala Ile
145 150 155 160
Ser Phe Ala Ile Ala Ala Phe Lys Val Pro Leu Thr Val Thr Asn Ser
165 170 175
Val Leu Val Leu Tyr Ile Asn Ser Ala Phe Ala Ile Thr
180 185

<210> 33
<211> 190
<212> PRT
<213> Artificial Sequence

<220>
<223> Transmembrane

<400> 33
Val Leu Ile Phe Ser Ile Ile Thr Gly Ile Ile Leu Val Ile Leu Thr
1 5 10 15
Thr Gln Tyr Lys Thr Val Pro Arg Phe Met Cys Asn Leu Ala Phe Ala
20 25 30
Asp Leu Cys Ile Ile Tyr Leu Leu Leu Ile Ser Ile His Lys Ser Gln
35 40 45
Tyr His Asn Tyr Ala Asp Gln Ala Asp Ala Phe Thr Leu Tyr Thr Ala
50 55 60
Ile Thr Trp His Thr Ile Thr His Ala Met Gln Leu Asp Cys Val Gln
65 70 75 80
His Ala Ala Ser Val Met Val Met Gly Trp Ile Phe Ala Phe Ala Ala
85 90 95
Leu Phe Ile Phe Ile Ser Met Lys Val Ser Ile Met Asp Ile Asp Ser
100 105 110
Pro Leu Ser Gln Leu Val Met Ser Leu Leu Val Val Leu Val Val Ile
115 120 125
Cys Gly Cys Ile His Ile Leu Thr Val Arg Asn Pro Asn Ile Val Ser
130 135 140
Ser Ser Ser Thr Arg Ile Ala Arg Met Met Asp Phe Leu Cys Met Ala
145 150 155 160
Ile Ser Phe Ala Ile Ala Ser Leu Lys Val Pro Leu Thr Val Ser Lys
165 170 175
Ala Ile Leu Val Leu His Ile Asn Ser Ala Phe Ala Ile Thr
180 185 190

<210> 34
<211> 190
<212> PRT
<213> Artificial Sequence

<220>

<223> Transmembrane

<400> 34
Ile Val Val Phe Val Ser Leu Leu Leu Gly Val Phe Leu Leu Ile Leu
 1   5   10   15
Leu Thr His Tyr Lys Asn Val Pro Arg Phe Met Cys Asn Leu Ala Phe
            20   25   30
Ala Asp Phe Cys Met Met Tyr Leu Leu Leu Ile Ser Leu Tyr His Ser
        35   40   45
Glu Tyr Tyr Asn His Ala Asp Gln Pro Asn Thr Phe Thr Leu Tyr Thr
    50   55   60
Val Ile Thr Trp Tyr Ala Ile Thr Phe Ala Met Arg Leu Asp Arg Ile
65   70   75   80
Arg His Ala Cys Ala Ile Met Val Gly Gly Trp Val Cys Cys Phe Leu
                85   90   95
Leu Leu Leu Val Ile Ser Ala Lys Val Ser Ile Met Asp Thr Glu Thr
            100   105   110
Pro Leu Ala Leu Ala Ile Val Phe Val Leu Thr Ile Val Val Ile Val
        115   120   125
Cys Cys Cys His Val Ile Ile Thr Val Arg Asn Pro Gln Tyr Asn Pro
    130   135   140
Gly Asp Lys Thr Lys Ile Ala Arg Met Val Asp Phe Ile Cys Met Ala
145   150   155   160
Ile Ser Tyr Ala Leu Ala Ile Leu Asn Lys Pro Leu Thr Val Ser Asn
                165   170   175
Ser Ile Leu Val Leu Tyr Leu Asn Ser Ala Phe Ala Ile Thr
            180   185   190

<210> 35
<211> 143
<212> PRT
<213> Artificial Sequence

<220>
<223> C-terminal tail

<400> 35
Pro Lys Lys Glu Trp Lys Leu Lys Arg Arg Val Thr Arg Lys His Gly
 1   5   10   15
Ser Val Ser Val Ser Ile Ser Ser Gln Gly Gly Cys Gly Glu Gln Asp
            20   25   30
Phe Tyr Tyr Asp Cys Gly Met Tyr Ser His Leu Gln Gly Asn Leu Thr
        35   40   45
Val Cys Asp Cys Cys Glu Ser Phe Leu Leu Thr Lys Pro Val Ser Cys
    50   55   60
Lys His Leu Ile Lys Ser His Ser Cys Pro Val Leu Thr Ala Ala Ser
65   70   75   80
Cys Gln Arg Pro Glu Ala Tyr Trp Ser Asp Cys Gly Thr Gln Ser Ala
                85   90   95
His Ser Asp Tyr Ala Asp Glu Glu Asp Ser Phe Val Ser Asp Ser Ser
            100   105   110

```
Asp Gln Val Gln Ala Cys Gly Arg Ala Cys Phe Tyr Gln Ser Arg Gly
        115                 120                 125
Phe Pro Leu Val Arg Tyr Ala Tyr Asn Leu Gln Arg Val Arg Asp
    130                 135                 140

<210> 36
<211> 80
<212> PRT
<213> Artificial Sequence

<220>
<223> C-terminal tail

<400> 36
Pro His Lys Glu Leu Val Ser Arg Lys Gln Thr Tyr Val Trp Thr Arg
 1               5                  10                  15
Ser Lys His Pro Ser Leu Met Ser Ile Asn Ser Asp Asp Val Glu Lys
            20                  25                  30
Gln Ser Cys Asp Ser Thr Gln Ala Leu Val Thr Phe Thr Ser Ser Ser
        35                  40                  45
Ile Thr Tyr Asp Leu Pro Pro Ser Ser Val Pro Ser Pro Ala Tyr Pro
    50                  55                  60
Val Thr Glu Ser Cys His Leu Ser Ser Val Ala Phe Val Pro Cys Leu
65                  70                  75                  80

<210> 37
<211> 69
<212> PRT
<213> Artificial Sequence

<220>
<223> C-terminal tail

<400> 37
Lys Thr Gln Arg Phe Phe Leu Leu Ser Lys Phe Gly Cys Cys Lys Arg
 1               5                  10                  15
Arg Ala Glu Leu Tyr Arg Arg Lys Asp Phe Ser Ala Tyr Thr Ser Asn
            20                  25                  30
Cys Lys Asn Gly Phe Thr Gly Ser Asn Lys Pro Ser Gln Ser Thr Leu
        35                  40                  45
Lys Leu Ser Thr Leu His Cys Gln Gly Thr Ala Leu Leu Asp Lys Thr
    50                  55                  60
Arg Tyr Thr Glu Cys
65

<210> 38
<211> 62
<212> PRT
<213> Artificial Sequence

<220>
```

<223> C-terminal tail

<400> 38
Lys Asn Arg Arg Phe Phe Ile Leu Ser Lys Cys Gly Cys Tyr Glu Met
1 5 10 15
Gln Ala Gln Ile Tyr Arg Thr Glu Thr Ser Ser Thr Val His Asn Thr
20 25 30
His Pro Arg Asn Gly His Cys Ser Ser Ala Pro Arg Val Thr Asn Gly
35 40 45
Ser Thr Tyr Ile Leu Val Pro Leu Ser His Leu Ala Gln Asn
50 55 60

<210> 39
<211> 79
<212> PRT
<213> Artificial Sequence

Q8

<220>
<223> C-terminal tail

<400> 39
Lys Ala Gln Arg Val Phe Ile Leu Ser Lys Phe Gly Ile Cys Lys Arg
1 5 10 15
Gln Ala Gln Ala Tyr Arg Gly Gln Arg Val Pro Pro Lys Asn Ser Thr
20 25 30
Asp Ile Gln Val Gln Lys Val Thr His Asp Met Arg Gln Gly Leu His
35 40 45
Asn Met Glu Asp Val Tyr Glu Leu Ile Glu Asn Ser His Leu Thr Pro
50 55 60
Lys Lys Gln Gly Gln Ile Ser Glu Glu Tyr Met Gln Thr Val Leu
65 70 75